NOTES ON NESTS OF *LEIOPROCTUS CRISTATUS* (SMITH) (HYMENOPTERA: COLLETIDAE)

G.V. MAYNARD[1] and C.J. BURWELL

Department of Entomology, University of Queensland, Brisbane, Qld, 4072

Abstract

A nesting site of *Leioproctus cristatus* was found at Margate (27°15'S 153°06'E), coastal south-eastern Queensland. The bees were nesting gregariously in firm moist sand, up to a density of 55 entrances/m^2. Each entrance was surrounded by a tumulus of loose sand and led to a more or less vertical burrow about 1 m long.

Introduction

A nesting site of a medium sized (10 mm) colletid bee (*Leioproctus cristatus*) was brought to our attention in October 1990. Its nests have not been recorded previously. The site was located in a small garden at Margate, a coastal community north-east of Brisbane, Queensland. The residents of the property have been stung frequently due to high numbers of females present during the peak nesting season, particularly when the bees became lodged in clothing on the washing line.

Observations

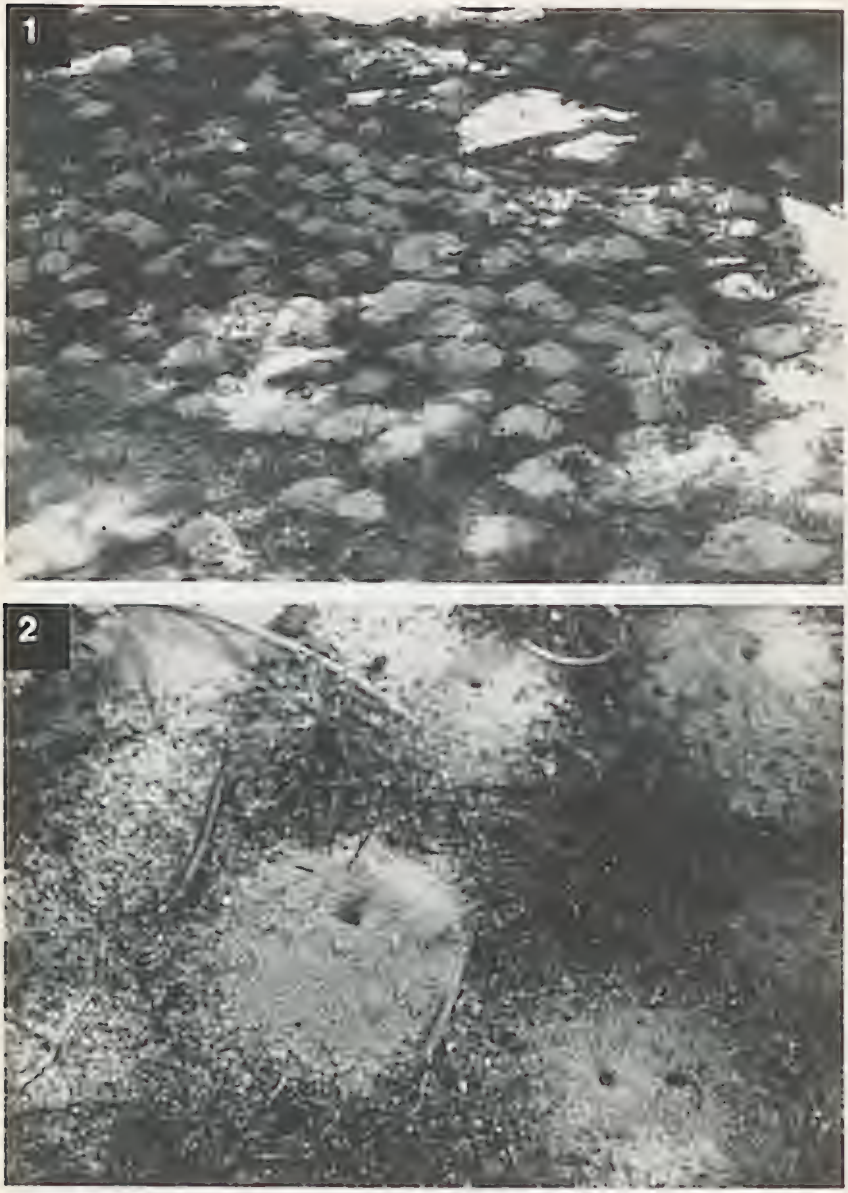
The nesting site was about 200 m from the high water (spring) level and consisted of approximately 4 m^2 of bare sand with a sparse covering of carpet grass (*Axonopus* sp.). The surface of the site was gently sloping and shaded to varying degrees but never exposed to full sunlight. The nests were excavated in 1991, but observations were made during both visits. Ten burrows were followed, six of these by pouring thin plaster of paris down the tunnel and carefully digging away the soil from them when the plaster had set; the other four had fine coloured wire inserted down the burrows and the sand then carefully dug away.

Nest entrances were 6-7 mm diameter in fine, moist, compact sand with as many as 55 entrances/m^2 (Fig. 1). Many had a tumulus of loose orange sand (in contrast to the black surface sand) about 35 mm in diameter and 20 mm high (Fig. 2). Each burrow was more or less vertical, about 1 m long and the diameter of the tunnel constant throughout its length. Cells were not located along the length of the tunnel nor at its termination, possibly indicating that few cells had been completed at the time of excavation. There was no indication of interconnecting burrows.

The nesting site was visited on 3.x.1990 and 9.ix.1991 where female *L. cristatus* were flying rapidly to and fro over the nests about 30 cm above the ground. Upon landing they walked over the surface of the sand, often testing several nest entrances before entering a burrow.

In October 1990 many females were observed carrying pollen into the burrows. These females spent several minutes below ground before

[1]*Present address*: ABRS, P.O. Box 636, Canberra, A.C.T., 2601



Figs 1 and 2. (1) The nesting site showing the conspicuous aggregation of the nest entrances. Each entrance is surrounded by a tumulus of light coloured sand; (2) Detail of four nest entrances. The difference in height of the tumuli of the two entrances in the foreground may reflect the stage of construction of the burrow.

re-emerging. In September 1991 only a few females were seen carrying pollen, but many females were observed constructing burrows, pushing sand out of the burrows with their heads. Males were not collected at the nest site but along with females at flowering *Leptospermum* and *Melaleuca* approximately 200 m away.

Discussion

Nests of six other species of *Leioproctus* Smith have been recorded (unpubl. obs.), all of which have similar architecture to *L. cristatus*. Each differs in the depth and diameter of the burrows, but mostly have a low tumulus over a single entrance burrow with one to several cells radiating terminally.

To date, all species of *Leioproctus* have been found to nest gregariously and this may simply reflect the conspicuousness of large aggregations of nest entrances (e.g. Fig. 1). It is quite possible that some species of *Leioproctus* are dispersed or "solitary" nesters, the single nest entrances having gone unnoticed. Despite the density of aggregations, no interactions between bees have been observed.

Acknowledgments

We would like to thank Mr and Mrs S. Cramb for bringing the nests of *Leioproctus cristatus* to our attention as well as for allowing us to excavate their back garden.